**CLAIM SET AS AMENDED**

**Claim 1** (Currently Amended) A method of testing a bit error rate for each of *N* optical communication channels in a wavelength division multiplexed optical communication system having *N* optical transmitters communicating to *N* optical receivers via *N* communication channels, the method comprising:

cascading said *N* optical communication channels such that an electrical output of an optical receiver *i* for an optical communication channel *i* is connected to an input of an optical transmitter *i* + 1 for an optical communication channel *i* + 1, for all values of *i* from one to *N-1*, so as to form a continuous cascade of optical transmitter/receiver pairs;

supplying a bit error rate test signal from a bit error rate tester to an input for a first optical transmitter for a first optical communication channel;

supplying the bit error rate test signal from an output of optical receiver *N* to the bit error rate tester;

detecting errors in the bit error rate test signal received by the bit error rate tester and calculating therefrom a measured bit error rate;

comparing the measured bit error rate with a predetermined system bit error rate threshold;

indicating that the bit error rate for each of the *N* optical communication channels is less than a specified bit error rate value when the measured bit error rate is less than or equal to the predetermined system bit error rate threshold; and

monitoring a signal quality for the bit error rate test signal at each of the *N* optical transmitters and *N* optical receivers when the measured bit error rate is greater than the predetermined system bit error rate threshold to thereby determine which of the *N* optical communication channels ~~has~~ is greater/less than a specified bit error rate value.

**Claim 2** (Original) The method of claim 1, wherein said predetermined system bit error rate is equal to the specified bit error rate for each of *N* optical communication channels.

**Claim 3** (Currently Amended) The method of claim 1, wherein said monitoring said signal quality includes a bit parity check that is independent of the bit error rate test signal.

**Claim 4** (Currently Amended) The method of claim 3, wherein said monitoring includes monitoring a bit interleave parity for said bit

parity check on each electrical signal in the *N* optical ~~communication channels~~ transmitter/receiver pairs.

**Claim 5** (New) A method for performing a bit error rate test for a plurality of optical communication channels of a wavelength division optical communication system having transmitters and receivers, comprising:

supplying a bit error rate test signal from a bit error rate tester to an input for a first optical transmitter for a first optical communication channel of said plurality of optical communication channels arranged in a continuous cascade of a plurality of transmitter/receiver pairs;

receiving the bit error test signal at the bit error rate tester from a final optical receiver;

detecting a measured bit error rate; and

identifying at least one faulty communication channel from said plurality of optical communication channels by performing a bit parity check for each transmitter/receiver pair because the measured bit error rate is below a predetermined system bit error rate threshold.

**Claim 6** (New) The method of claim 5, further comprising monitoring a signal quality for the at least one faulty communication channel using an internal performance monitor.

**Claim 7** (New) The method of claim 6, wherein said internal performance monitor checks a signal transmitted through the at least one faulty communication channel.

**Claim 8** (New) The method of claim 5, further comprising passing said bit error rate test signal through said plurality of optical communication channels.

**Claim 9** (New) A system for testing optical communication channels for wavelength division multiplexed optical communication using transmitters and receivers, comprising:

a bit error rate tester to generate a bit error rate test signal, wherein the bit error rate test signal is transmitted over a plurality of optical communication channels arranged in a continuous cascade of optical transmitter/receiver pairs;

said tester determining a measured bit error rate, wherein said tester determines whether said measured bit error rate is greater than a predetermined bit error rate threshold for said plurality of optical communication channels; and

a diagnostic analyzer to analyze diagnostic output signals from said transmitters and said receivers and to identify at least one faulty communication channel from said optical transmitter/receiver pairs using a bit parity check because said measured bit error rate is greater than said predetermined bit error rate threshold.

**Claim 10** (New) The system of claim 8, further comprising an internal performance monitor coupled to said diagnostic analyzer.

**Claim 11** (New) The system of claim 9, wherein said internal performance monitor includes an error monitoring unit.